

**Genetics**  
**Learning Set 2.3**  
**How Do Scientists Study Traits?**  
**The Story of Gregor Mendel and His Garden Peas**

Tell the story of *Gregor Mendel*. In the bottom of each box, below the dashed line, record the main ideas for the selection of text. In the top of the box, draw a picture to illustrate the main ideas.

<div>1</div> <div></div> <div>-----</div> <div>Page 49 Paragraph 1</div>	<div>2</div> <div></div> <div>-----</div> <div>Page 49 Paragraph 2</div>
<div>3</div> <div></div> <div>-----</div> <div>Page 50 Paragraph 1</div>	<div>4</div> <div></div> <div>-----</div> <div>Page 50 Paragraph 2</div>
<div>5</div> <div></div> <div>-----</div> <div>Page 50 Paragraph 3 and picture top of page 51</div>	<div>6</div> <div></div> <div>-----</div> <div>Page 51 Paragraph 1</div>

<p>7</p> <hr/> <p>Page 51 Paragraph 2</p>	<p>8</p> <hr/> <p>Page 52 Paragraph 1 and diagram</p>
<p>9</p> <hr/> <p>Page 52 Paragraph 2</p>	<p>10</p> <hr/> <p>Page 53 Paragraph 1</p>
<p>11</p> <hr/> <p>Page 53 Paragraph 2</p>	

## How Do Scientists Today Explain Mendel's Discoveries?

**Directions:** List several facts as you read the first pages 54-56. Then put the facts together to answer the question.

Fact: \_\_\_\_\_

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Fact: \_\_\_\_\_

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Fact: \_\_\_\_\_  
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**Use the facts to answer the question:** *How Do Scientists Today Explain Mendel's Discoveries?*

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### **Stop and Think**

1. How do a chromosome, a gene, and an allele differ? How are they similar?
2. Short stems are recessive in pea plants. If a pea plant is short, is it homozygous or heterozygous. Justify your answer.
3. Green pod color, *G*, is dominant over yellow pod color, *g*. What genotypes are possible for the phenotype with green pods?

### **What's the Point? Page 57**

- Identify the main ideas from this section.

## More to Learn: What Are Other Ways Traits Are Inherited?

**Read the text and look at the diagram on page 58**

- Describe the theory of incomplete dominance.
- How is the theory of incomplete dominance different from the old theory of blending?

**Read the text and look at the diagram on pages 59 and 60**

- Describe the theory of co-dominance.
- How is the theory of co-dominance different from Mendel's theory of dominant and recessive traits?

## Questions

1. A mouse with black fur and a mouse with white fur have an offspring with black and white fur. This is an example of
- A. Mendel's theory of dominance
  - B. incomplete dominance
  - C. co-dominance

2. One parent has curly hair, the other parent has straight hair and their child has wavy hair.

This is an example of

- A. Mendel's theory of dominance
- B. incomplete dominance
- C. co-dominance

3. One parent has green eyes, the other parent has brown eyes, and all their children have brown eyes.

This is an example of

- A. Mendel's theory of dominance
- B. incomplete dominance
- C. co-dominance

4. A dog with white fur and a dog with black fur off spring have a litter of 4 puppies. One puppy has white fur, one puppy has black fur and the other two have gray fur.

This is an example of

- A. Mendel's theory of dominance
- B. incomplete dominance
- C. co-dominance

## Reflect

Discuss the following questions with your partner and be prepared to discuss as a class.

1. What is the difference between first and second-generation offspring when characteristics are inherited through incomplete dominance? Think about snapdragons. How does incomplete dominance make predicting the outcome of crossing plants more difficult?

2. Some science happens by chance; sometimes scientists get lucky. Mendel studied traits that were inherited only through pure dominance. How difficult would Mendel's task have been if he had chosen a trait that was inherited through co-dominance? Why?